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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/565,332

01/19/2006

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EXAMINER

NGUYEN, HUNG D

ART UNIT

PAPER NUMBER

3742

MAIL DATE

DELIVERY MODE

11/10/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/565,332	<b>Applicant(s)</b> RIPPL, PETER	
	<b>Examiner</b> HUNG NGUYEN	<b>Art Unit</b> 3742	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 6-7, 10-15, 17-18 and 21-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Coulter (US Pat. 4,578,554).

3. Regarding claims 1 and 14, Coulter discloses a machining workpiece with a moving laser beam, the process comprising: holding a laser tool 16 (Fig. 1) that emits the laser beam by a multiaxial mechanical manipulator A, B, C, D and E (Fig. 1, Illustrated below) at a manipulator hand E (Fig. 1, Illustrated below) at a spaced location above the workpiece 14 (Fig. 1, Illustrated below); moving the laser tool along a predetermined path along the workpiece (Abstract) by a displacing motion of the manipulator D (Fig. 1, Illustrated below) and during the displacing motion of the manipulator; and superimposing a compensating motion of the laser beam to the displacing motion during the displacing motion with the compensating motion being at least partially oppositely directed to the displacing motion.

4. Regarding claim 2, Coulter discloses a workpiece 14 (Fig. 1, Illustrated below) is machined intermittently, while machining phases and transport phases alternate (Arm C, Fig. 1 Illustrated below), wherein the point at which the laser beam reaches the

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surface gets ahead of the laser tool (Fig. 1, Illustrated below, Shows the laser beam reaches the surface gets ahead the laser head, therefore as the arm D, Fig. 1, Illustrated below, moves upward by the "24" axis with respect to the workpiece, the robot arm C must move downward "22" axis to keep the constant distance from the workpiece; as the laser head pointed upwardly to the workpiece, the laser beam reaches to the surface ahead of the laser head).

5. Regarding claims 3 and 23, Coulter discloses at least partially transversely directed compensating motion of the laser beam is superimposed to the displacing motion during the machining operation. (Arm D Fig. 1, Illustrated below, movement same as compensating motion, is superimposed to the arm C Fig. 1, Illustrated below, movement same as displacement motion, to do the seam welding).

6. Regarding claim 6, Coulter discloses the compensation motion of the laser beam is an angular motion (Arm D, Fig. 1, Illustrated below, moves with "24" axis).

7. Regarding claim 7, Coulter discloses the compensating motion of the laser beam is performed by a pivoting motion of the manipulator hand about one of its hand axis D (Fig. 1, Illustrated below).

8. Regarding claim 10, Coulter discloses the laser beam is directed toward the workpiece at the beginning of machining with an obliquely forwardly directed beam angle  $\alpha$ ,  $\alpha'$  (Arm D Fig. 1, Illustrated below) swings up about "24" axis", with an angle and start the welding downwardly back to the horizontal position).

9. Regarding claim 11, Coulter discloses the laser beam is directed toward the workpiece at the beginning of machining with an obliquely rearwardly directed beam

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angle  $\beta$ ,  $\beta'$  (Arm D Fig. 1, Illustrated below, swings down about "24" axis", with an angle and start the welding upwardly back to the horizontal position).

10. Regarding claim 12, Coulter discloses the manipulator 110 (Fig. 1, Illustrated below) performs an essentially constant displacing motion (axis "28" Fig. 1, Illustrated below) during the machining.

11. Regarding claim 13, Coulter disclose the manipulator 10 (Fig. 1, Illustrated below) performs an essentially constant displacing motion during the transport phases between the machinings; arm C (Fig. 1, Illustrated below) needs to move for welding one spot to another.

12. Regarding claim 15, Coulter discloses the manipulator 10 (Fig. 1, Illustrated below) has a multiaxial manipulator hand A, B, C, D, E, F (Fig. 1, Illustrated below) in which at least one said hand axis 28/30 (Fig. 1, Illustrated below) can be controlled independently from the displacing motion.

13. Regarding claim 17 and 18, Coulter discloses the laser tool has a focusing optical system for generating a fixed-angle laser beam and the laser tool has a fixed focal distance (Col. 4, Lines 28-63).

14. Regarding claim 21, Coulter discloses the manipulator 10 (Fig. 1, Illustrated below) is designed as a, at least six-axis 20, 22, 24, 26, 28 and 30 (Fig. 1, Illustrated below) articulated-arm robot.

15. Regarding claim 22, Coulter discloses the laser tool is designed as a welding tool (Title; Col. 3, Lines 9-10).

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***Claim Rejections - 35 USC § 103***

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Coulter (US Pat. 4,578,554) in view of Goutines (JP 7-256478).

18. Regarding claim 19, Coulter discloses substantially all features of the claimed invention as set forth above except for the laser tool has a focal distance of approx. 150 mm to 400 mm. Goutines discloses a laser beam welding having the focal distance of 150 (Abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in Coulter to have focal distance from 150 mm to 400 mm, as taught by Goutines, for the purpose of focusing over a large area.

19. Claims 4, 5, 9 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coulter (US Pat. 4,578,554) in view of Maruyama et al. (US Pat. 6,072,149).

20. Regarding claims 4-5, Coulter discloses substantially all features of the claimed invention as set forth above except for the velocity of the displacement  $V_r$  is greater than the oppositely directed compensating velocity  $V_w$  in the manner recited in claim 4 and the velocity of the displacement  $V_r$  is greater than the machining velocity  $V_s$  of the laser beam at the workpiece in the manner recited in claim 5. Maruyama et al. discloses an apparatus for welding workpiece with laser beam where the laser head

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mounted on the distal end of a robot arm in which the velocity of the displacement is greater than the oppositely directed compensating velocity and the velocity of the displacement is greater than the machining velocity of the laser beam at the workpiece as the laser beam applying head is position close to the region of the workpiece to be welded, it is difficult to move the laser head at a high speed (Col. 1, Lines 51-54) (Robot movement speed vs. Arm rotation movement for detail welding). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in Torii et al., the velocity of the displacement  $V_r$  is greater than the oppositely directed compensating velocity  $V_w$  and the velocity of the displacement  $V_r$  is greater than the machining velocity  $V_s$  of the laser beam at the workpiece, as taught by Maruyama et al. in order to have the velocity of the displacement  $V_r$  is greater than the oppositely directed compensating velocity and the displacement  $V_r$  is greater than the machining velocity  $V_s$ , for the purpose of welding a workpiece efficiently and smoothly.

21. Regarding claims 9 and 20, Coulter discloses substantially all features of the claimed invention as set forth above except for the laser tool has a mobile, controllable scanning means. Maruyama et al. discloses a laser tool has a mobile, controllable scanning means 16 (Fig. 3) wherein two scanning mirrors 68 and 70 (Fig. 3) (Col. 3, Lines 4-48). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in Coulter to have the laser tool has a mobile, controllable scanning means, as taught by Maruyama et al., for the purpose of providing a scanning apparatus used for seam tracking in a welding system.

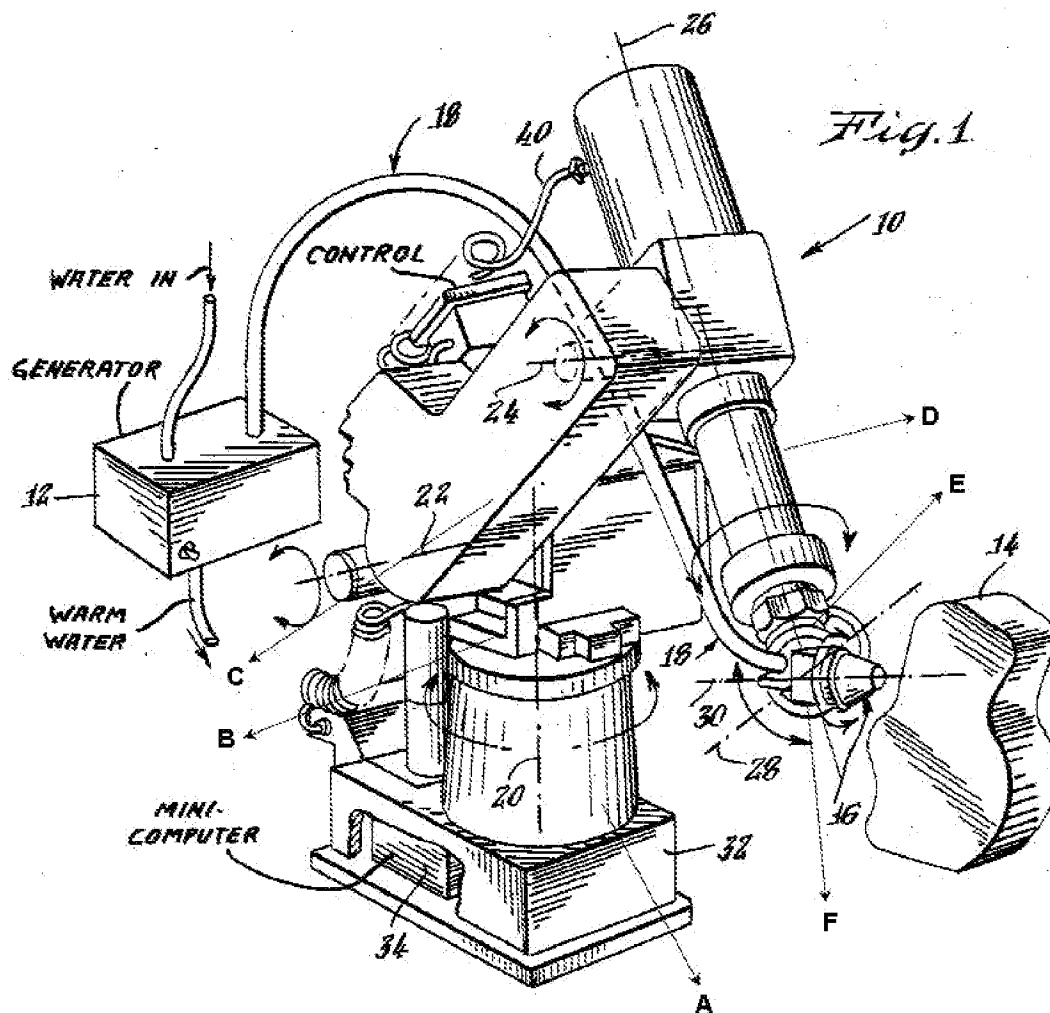
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22. Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coulter (US Pat. 4,578,554) in view of Moran (US Pat. 4,798,321).

23. Regarding claim 8 and 16, Coulter discloses substantially all features of the claimed invention as set forth above except for the laser tool is mounted on the manipulator hand by means of an extension arm that creates a distance. Moran discloses an extension arm 43 (Fig. 6 and Fig. 7) can be adjust to create the distance (Col. 5, Line 67 to Col. 6, Line8). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in Coulter to have the laser tool is mounted on the manipulator hand by means of an extension arm that creates a distance, as taught by Moran, for the purpose extending the welding torch further distance.

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Snell (US Pat. 5,690,034) discloses a method for controlling the movement of an industrial robot at and near singularities. Brunman et al. (US Pat. 5,564,312) discloses an industrial robot. Cheng (US Pub. 2003/0171847) discloses a method of controlling a robot through a singularity.





25. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

26. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUNG NGUYEN whose telephone number is (571)270-7828. The examiner can normally be reached on Monday-Friday, 9M-6PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Hoang can be reached on (571)272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HUNG NGUYEN/  
Examiner, Art Unit 3742  
11/7/2009  
/TU B HOANG/

Supervisory Patent Examiner, Art Unit 3742